SEQUENCE LISTING

<110> AUDIT, Muriel
COSSET, François-Loïc

<120> CHIMERIC PLASMID COMPRISING A REPLICATIVE RETROVIRAL GENOME AND USES

<130> 1759.135

<150> PCT/FR02/03934
<151> 2002-11-18

<150> FR 0114976
<151> 2001-11-20

<160> 15

<170> PatentIn version 3.1

<210> 1
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<212> PRT
<213> Artificial Sequence

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<223> product of gag sequence of pAM plasmid

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Arg Arg Trp Val Thr Phe Cys Ser Ala Glu Trp Pro Thr Phe Asn Val
        35                  40                  45


Gly Trp Pro Arg Asp Gly Thr Phe Asn Arg Asp Leu Ile Thr Gln Val
    50                  55                  60


Lys Ile Lys Val Phe Ser Pro Gly Pro His Gly His Pro Asp Gln Val
65                  70                  75                  80


Pro Tyr Ile Val Thr Trp Glu Ala Leu Ala Phe Asp Pro Pro Pro Trp
                85                  90                  95


Val Lys Pro Phe Val His Pro Lys Pro Pro Pro Pro Leu Pro Pro Ser
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Ala Pro Ser Leu Pro Leu Glu Pro Pro Arg Ser Thr Pro Pro Arg Ser
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Ser Leu Tyr Pro Ala Leu Thr Pro Ser Leu Gly Ala Lys Pro Lys Pro
    130                 135                 140

Gln Val Leu Ser Asp Ser Gly Gly Pro Leu Ile Asp Leu Leu Thr Glu
145                 150                 155                 160

Asp Pro Pro Pro Tyr Arg Asp Pro Arg Pro Pro Pro Ser Asp Arg Asp
                165                 170                 175

Gly Asn Gly Gly Glu Ala Thr Pro Ala Gly Glu Ala Pro Asp Pro Ser
            180                 185                 190

Pro Met Ala Ser Arg Leu Arg Gly Arg Arg Glu Pro Pro Val Ala Asp
        195                 200                 205

Ser Thr Thr Ser Gln Ala Phe Pro Leu Arg Ala Gly Gly Asn Gly Gln
    210                 215                 220

Leu Gln Tyr Trp Pro Phe Ser Ser Ser Asp Leu Tyr Asn Trp Lys Asn
225                 230                 235                 240

Asn Asn Pro Ser Phe Ser Glu Asp Pro Gly Lys Leu Thr Ala Leu Ile
                245                 250                 255

Glu Ser Val Leu Ile Thr His Gln Pro Thr Trp Asp Asp Cys Gln Gln
            260                 265                 270

Leu Leu Gly Thr Leu Leu Thr Gly Glu Glu Lys Gln Arg Val Leu Leu
        275                 280                 285

Glu Ala Arg Lys Ala Val Arg Gly Asp Asp Gly Arg Pro Thr Gln Leu
    290                 295                 300

Pro Asn Glu Val Asp Ala Ala Phe Pro Leu Glu Arg Pro Asp Trp Asp
305                 310                 315                 320

Tyr Thr Thr Gln Ala Gly Arg Asn His Leu Val His Tyr Arg Gln Leu
                325                 330                 335

Leu Leu Ala Gly Leu Gln Asn Ala Gly Arg Ser Pro Thr Asn Leu Ala
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            340                 345                 350

Lys Val Lys Gly Ile Thr Gln Gly Pro Asn Glu Ser Pro Ser Ala Phe
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Leu Glu Arg Leu Lys Glu Ala Tyr Arg Arg Tyr Thr Pro Tyr Asp Pro
    370                 375                 380

Glu Asp Pro Gly Gln Glu Thr Asn Val Ser Met Ser Phe Ile Trp Gln
385                 390                 395                 400

Ser Ala Pro Asp Ile Gly Arg Lys Leu Glu Arg Leu Glu Asp Leu Lys
                405                 410                 415

Asn Lys Thr Leu Gly Asp Leu Val Arg Glu Ala Glu Lys Ile Phe Asn
            420                 425                 430

Lys Arg Glu Thr Pro Glu Glu Arg Glu Glu Arg Ile Arg Arg Glu Thr
        435                 440                 445

Glu Glu Lys Glu Glu Arg Arg Arg Thr Glu Asp Glu Gln Lys Glu Lys
    450                 455                 460

Glu Arg Asp Arg Arg Arg His Arg Glu Met Ser Lys Leu Leu Ala Thr
465                 470                 475                 480

Val Val Ser Gly Gln Lys Gln Asp Arg Gln Gly Gly Glu Arg Arg Arg
                485                 490                 495

Ser Gln Leu Asp Arg Asp Gln Cys Ala Tyr Cys Lys Glu Lys Gly His
            500                 505                 510

Trp Ala Lys Asp Cys Pro Lys Lys Pro Arg Gly Pro Arg Gly Pro Arg
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Pro Gln Thr Ser Leu Leu Thr Leu Asp Asp
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Ser Val Leu Thr Gln Asn Pro Gly Pro Leu Ser Asp Lys Ser Ala Trp
        35                  40                  45


Val Gln Gly Ala Thr Gly Gly Lys Arg Tyr Arg Trp Thr Thr Asp Arg
    50                  55                  60


Lys Val His Leu Ala Thr Gly Lys Val Thr His Ser Phe Leu His Val
65                  70                  75                  80


Pro Asp Cys Pro Tyr Pro Leu Leu Gly Arg Asp Leu Leu Thr Lys Leu
                85                  90                  95


Lys Ala Gln Ile His Phe Glu Gly Ser Gly Ala Gln Val Met Gly Pro
            100                 105                 110


Met Gly Gln Pro Leu Gln Val Leu Thr Leu Asn Ile Glu Asp Glu His
        115                 120                 125


Arg Leu His Glu Thr Ser Lys Glu Pro Asp Val Ser Leu Gly Ser Thr
    130                 135                 140


Trp Leu Ser Asp Phe Pro Gln Ala Trp Ala Glu Thr Gly Gly Met Gly
145                 150                 155                 160


Leu Ala Val Arg Gln Ala Pro Leu Ile Ile Pro Leu Lys Ala Thr Ser
                165                 170                 175


Thr Pro Val Ser Ile Lys Gln Tyr Pro Met Ser Gln Glu Ala Arg Leu
            180                 185                 190


Gly Ile Lys Pro His Ile Gln Arg Leu Leu Asp Gln Gly Ile Leu Val
        195                 200                 205


Pro Cys Gln Ser Pro Trp Asn Thr Pro Leu Leu Pro Val Lys Lys Pro
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    210                 215                 220

Gly Thr Asn Asp Tyr Arg Pro Val Gln Asp Leu Arg Glu Val Asn Lys
225                 230                 235                 240

Arg Val Glu Asp Ile His Pro Thr Val Pro Asn Pro Tyr Asn Leu Leu
                245                 250                 255

Ser Gly Leu Pro Pro Ser His Gln Trp Tyr Thr Val Leu Asp Leu Lys
            260                 265                 270

Asp Ala Phe Phe Cys Leu Arg Leu His Pro Thr Ser Gln Pro Leu Phe
        275                 280                 285

Ala Phe Glu Trp Arg Asp Pro Glu Met Gly Ile Ser Gly Gln Leu Thr
    290                 295                 300

Trp Thr Arg Leu Pro Gln Gly Phe Lys Asn Ser Pro Thr Leu Phe Asp
305                 310                 315                 320

Glu Ala Leu His Arg Asp Leu Ala Asp Phe Arg Ile Gln His Pro Asp
                325                 330                 335

Leu Ile Leu Leu Gln Tyr Val Asp Asp Leu Leu Leu Ala Ala Thr Ser
            340                 345                 350

Glu Leu Asp Cys Gln Gln Gly Thr Arg Ala Leu Leu Gln Thr Leu Gly
        355                 360                 365

Asn Leu Gly Tyr Arg Ala Ser Ala Lys Lys Ala Gln Ile Cys Gln Lys
    370                 375                 380

Gln Val Lys Tyr Leu Gly Tyr Leu Leu Lys Glu Gly Gln Arg Trp Leu
385                 390                 395                 400

Thr Glu Ala Arg Lys Glu Thr Val Met Gly Gln Pro Thr Pro Lys Thr
                405                 410                 415

Pro Arg Gln Leu Arg Glu Phe Leu Gly Thr Ala Gly Phe Cys Arg Leu
            420                 425                 430

Trp Ile Pro Gly Phe Ala Glu Met Ala Ala Pro Leu Tyr Pro Leu Thr
        435                 440                 445
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Lys Thr Gly Thr Leu Phe Asn Trp Gly Pro Asp Gln Gln Lys Ala Tyr
    450                 455                 460

Gln Glu Ile Lys Gln Ala Leu Leu Thr Ala Pro Ala Leu Gly Leu Pro
465                 470                 475                 480

Asp Leu Thr Lys Pro Phe Glu Leu Phe Val Asp Glu Lys Gln Gly Tyr
                485                 490                 495

Ala Lys Gly Val Leu Thr Gln Lys Leu Gly Pro Trp Arg Arg Pro Val
            500                 505                 510

Ala Tyr Leu Ser Lys Lys Leu Asp Pro Val Ala Ala Gly Trp Pro Pro
        515                 520                 525

Cys Leu Arg Met Val Ala Ala Ile Ala Val Leu Thr Lys Asp Ala Gly
    530                 535                 540

Lys Leu Thr Met Gly Gln Pro Leu Val Ile Leu Ala Pro His Ala Val
545                 550                 555                 560

Glu Ala Leu Val Lys Gln Pro Pro Asp Arg Trp Leu Ser Asn Ala Arg
                565                 570                 575

Met Thr His Tyr Gln Ala Leu Leu Leu Asp Thr Asp Arg Val Gln Phe
            580                 585                 590

Gly Pro Val Val Ala Leu Asn Pro Ala Thr Leu Leu Pro Leu Pro Glu
        595                 600                 605

Glu Gly Leu Gln His Asp Cys Leu Asp Ile Leu Ala Glu Ala His Gly
    610                 615                 620

Thr Arg Ser Asp Leu Thr Asp Gln Pro Leu Pro Asp Ala Asp His Thr
625                 630                 635                 640

Trp Tyr Thr Asp Gly Ser Ser Phe Leu Gln Glu Gly Gln Arg Lys Ala
                645                 650                 655

Gly Ala Ala Val Thr Thr Glu Thr Glu Val Ile Trp Ala Arg Ala Leu
            660                 665                 670
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Pro Ala Gly Thr Ser Ala Gln Arg Ala Glu Leu Ile Ala Leu Thr Gln
        675                 680                 685

Ala Leu Lys Met Ala Glu Gly Lys Lys Leu Asn Val Tyr Thr Asp Ser
    690                 695                 700

Arg Tyr Ala Phe Ala Thr Ala His Ile His Gly Glu Ile Tyr Arg Arg
705                 710                 715                 720

Arg Gly Leu Leu Thr Ser Glu Gly Lys Glu Ile Lys Asn Lys Asp Glu
                725                 730                 735

Ile Leu Ala Leu Leu Lys Ala Leu Phe Leu Pro Lys Arg Leu Ser Ile
            740                 745                 750

Ile His Cys Pro Gly His Gln Lys Gly Asn Ser Ala Glu Ala Arg Gly
        755                 760                 765

Asn Arg Met Ala Asp Gln Ala Ala Arg Glu Val Ala Thr Arg Glu Thr
    770                 775                 780

Pro Gly Thr Ser Thr Leu Leu Ile Glu Asn Ser Thr Pro Tyr Thr His
785                 790                 795                 800

Glu His Phe His Tyr Thr Val Thr Asp Thr Lys Asp Leu Thr Lys Leu
                805                 810                 815

Gly Ala Thr Tyr Asp Ser Ala Lys Lys Tyr Trp Val Tyr Gln Gly Lys
            820                 825                 830

Pro Val Met Pro Asp Gln Phe Thr Phe Glu Leu Leu Asp Phe Leu His
        835                 840                 845

Gln Leu Thr His Leu Ser Phe Ser Lys Thr Lys Ala Leu Leu Glu Arg
    850                 855                 860

Ser Pro Ser Pro Tyr Tyr Met Leu Asn Arg Asp Arg Thr Leu Lys Asn
865                 870                 875                 880

Ile Thr Glu Thr Cys Lys Ala Cys Ala Gln Val Asn Ala Ser Lys Ser
                885                 890                 895
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Ala Val Lys Gln Gly Thr Arg Val Arg Gly His Arg Pro Gly Thr His
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Trp Glu Ile Asp Phe Thr Glu Val Lys Pro Gly Leu Tyr Gly Tyr Lys
915 920 925

Tyr Leu Leu Val Phe Val Asp Thr Phe Ser Gly Trp Ile Glu Ala Phe
930 935 940

Pro Thr Lys Lys Glu Thr Ala Lys Val Val Thr Lys Lys Leu Leu Glu
945 950 955 960

Glu Ile Phe Pro Arg Phe Gly Met Pro Gln Val Leu Gly Thr Asp Asn
965 970 975

Gly Pro Ala Phe Val Ser Lys Val Ser Gln Thr Val Ala Asp Leu Leu
980 985 990

Gly Ile Asp Trp Lys Leu His Cys Ala Tyr Arg Pro Gln Ser Ser Gly
995 1000 1005

Gln Val Glu Arg Met Asn Arg Thr Ile Lys Glu Thr Leu Thr Lys
1010 1015 1020

Leu Thr Leu Ala Thr Gly Ser Arg Asp Trp Val Leu Leu Leu Pro
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Leu Ala Leu Tyr Arg Ala Arg Asn Thr Pro Gly Pro His Gly Leu
1040 1045 1050

Thr Pro Tyr Glu Ile Leu Tyr Gly Ala Pro Pro Pro Leu Val Asn
1055 1060 1065

Phe Pro Asp Pro Asp Met Thr Arg Val Thr Asn Ser Pro Ser Leu
1070 1075 1080

Gln Ala His Leu Gln Ala Leu Tyr Leu Val Gln His Glu Val Trp
1085 1090 1095

Arg Pro Leu Ala Ala Ala Tyr Gln Glu Gln Leu Asp Arg Pro Val
1100 1105 1110

Val Pro His Pro Tyr Arg Val Gly Asp Thr Val Trp Val Arg Arg

1115 1120 1125

His Gln Thr Lys Asn Leu Glu Pro Arg Trp Lys Gly Pro Tyr Thr
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Val Leu Leu Thr Thr Pro Thr Ala Leu Lys Val Asp Gly Ile Ala
1145 1150 1155

Ala Trp Ile His Ala Ala His Val Lys Ala Ala Asp Thr Glu Ser
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Pro Leu Lys Ile Arg Leu Thr Arg Gly Ser Pro
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Ser Leu Gln Asn Lys Asn Pro His Gln Pro Met Thr Leu Thr Trp Gln
35 40 45

Val Leu Ser Gln Thr Gly Asp Val Val Trp Asp Thr Lys Ala Val Gln
50 55 60

Pro Pro Trp Thr Trp Trp Pro Thr Leu Lys Pro Asp Val Cys Ala Leu
65 70 75 80

Ala Ala Ser Leu Glu Ser Trp Asp Ile Pro Gly Thr Asp Val Ser Ser
85 90 95

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Ser Lys Arg Val Arg Pro Pro Asp Ser Asp Tyr Thr Ala Ala Tyr Lys
            100                 105                 110

Gln Ile Thr Trp Gly Ala Ile Gly Cys Ser Tyr Pro Arg Ala Arg Thr
        115                 120                 125

Arg Met Ala Ser Ser Thr Phe Tyr Val Cys Pro Arg Asp Gly Arg Thr
    130                 135                 140

Leu Ser Glu Ala Arg Arg Cys Gly Gly Leu Glu Ser Leu Tyr Cys Lys
145                 150                 155                 160

Glu Trp Asp Cys Glu Thr Thr Gly Thr Gly Tyr Trp Leu Ser Lys Ser
                165                 170                 175

Ser Lys Asp Leu Ile Thr Val Lys Trp Asp Gln Asn Ser Glu Trp Thr
            180                 185                 190

Gln Lys Phe Gln Gln Cys His Gln Thr Gly Trp Cys Asn Pro Leu Lys
        195                 200                 205

Ile Asp Phe Thr Asp Lys Gly Lys Leu Ser Lys Asp Trp Ile Thr Gly
    210                 215                 220

Lys Thr Trp Gly Leu Arg Phe Tyr Val Ser Gly His Pro Gly Val Gln
225                 230                 235                 240

Phe Thr Ile Arg Leu Lys Ile Thr Asn Met Pro Ala Val Ala Val Gly
                245                 250                 255

Pro Asp Leu Val Leu Val Glu Gln Gly Pro Pro Arg Thr Ser Leu Ala
            260                 265                 270

Leu Pro Pro Pro Leu Pro Pro Arg Glu Ala Pro Pro Pro Ser Leu Pro
        275                 280                 285

Asp Ser Asn Ser Thr Ala Leu Ala Thr Ser Ala Gln Thr Pro Thr Val
    290                 295                 300

Arg Lys Thr Ile Val Thr Leu Asn Thr Pro Pro Pro Thr Thr Gly Asp
305                 310                 315                 320

Arg Leu Phe Asp Leu Val Gln Gly Ala Phe Leu Thr Leu Asn Ala Thr
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```
                325                 330                 335

Asn Pro Gly Ala Thr Glu Ser Cys Trp Leu Cys Leu Ala Met Gly Pro
            340                 345                 350

Pro Tyr Tyr Glu Ala Ile Ala Ser Ser Gly Glu Val Ala Tyr Ser Thr
        355                 360                 365

Asp Leu Asp Arg Cys Arg Trp Gly Thr Gln Gly Lys Leu Thr Leu Thr
    370                 375                 380

Glu Val Ser Gly His Gly Leu Cys Ile Gly Lys Val Pro Phe Thr His
385                 390                 395                 400

Gln His Leu Cys Asn Gln Thr Leu Ser Ile Asn Ser Ser Gly Asp His
                405                 410                 415

Gln Tyr Leu Leu Pro Ser Asn His Ser Trp Trp Ala Cys Ser Thr Gly
            420                 425                 430

Leu Thr Pro Cys Leu Ser Thr Ser Val Phe Asn Gln Thr Arg Asp Phe
        435                 440                 445

Cys Ile Gln Val Gln Leu Ile Pro Arg Ile Tyr Tyr Tyr Pro Glu Glu
    450                 455                 460

Val Leu Leu Gln Ala Tyr Asp Asn Ser His Pro Arg Thr Lys Arg Glu
465                 470                 475                 480

Ala Val Ser Leu Thr Leu Ala Val Leu Leu Gly Leu Gly Ile Thr Ala
                485                 490                 495

Gly Ile Gly Thr Gly Ser Thr Ala Leu Ile Lys Gly Pro Ile Asp Leu
            500                 505                 510

Gln Gln Gly Leu Thr Ser Leu Gln Ile Ala Ile Asp Ala Asp Leu Arg
        515                 520                 525

Ala Leu Gln Asp Ser Val Ser Lys Leu Glu Asp Ser Leu Thr Ser Leu
    530                 535                 540

Ser Glu Val Val Leu Gln Asn Arg Arg Gly Leu Asp Leu Leu Phe Leu
545                 550                 555                 560
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Lys Glu Gly Gly Leu Cys Ala Ala Leu Lys Glu Glu Cys Cys Phe Tyr
                565                 570                 575

Ile Asp His Ser Gly Ala Val Arg Asp Ser Met Lys Lys Leu Lys Glu
            580                 585                 590

Lys Leu Asp Lys Arg Gln Leu Glu Arg Gln Lys Ser Gln Asn Trp Tyr
        595                 600                 605

Glu Gly Trp Phe Asn Asn Ser Pro Trp Phe Thr Thr Leu Leu Ser Thr
    610                 615                 620

Ile Ala Gly Pro Leu Leu Leu Leu Leu Leu Leu Leu Ile Leu Gly Pro
625                 630                 635                 640

Cys Ile Ile Asn Arg Leu Val Gln Phe Val Lys Asp Arg Ile Ser Val
                645                 650                 655

Val Gln Ala Leu Val Leu Thr Gln Gln Tyr His Gln Leu Lys Pro Ile
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Glu Tyr Glu Pro
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agaaccatca gatgtttcca gggtgcccca aggacctgaa atgaccctgt gccttatttg     360

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